

A House For All Seasons

A Home Owners Guide to Energy Efficiency

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Ontario

Ministry
of
Energy



HUDAC

Housing & Urban
Development
Association of
Canada



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Foreword

Welcome to Ontario's family of home owners. The purchase of your new house probably represents the largest investment you have ever made. We want you to get the best possible returns; in enjoyable living and in value for money spent on up-keep.

Undoubtedly, energy costs will be one of your biggest concerns. They are increasing every year. You can reduce their impact. It is our pleasure in this manual to show you how.

Like any automobile, your home will only give its best performance when it is operated properly. Develop good habits from the start. Unlike a car driver, the energy-wise home owner does not need an operator's licence — but you should heed some important rules and procedures. They are spelled out in these pages.

This manual acquaints you with the ways in which your home consumes energy. It also describes simple energy saving options, designed for do-it-yourself application. In addition, maintenance check lists and tables help you keep track of your energy consumption.

Read the contents carefully from cover to cover, at least once a year; certainly every Fall. Follow the suggestions and you will be well on the way towards conserving energy in your home.

By saving energy you will be helping your household budget and also reducing the province's critical dependence on scarce and expensive fuel supplies. Energy conservation deserves your best efforts.

Put this manual in a handy and visible location as a reminder and for quick and easy reference.

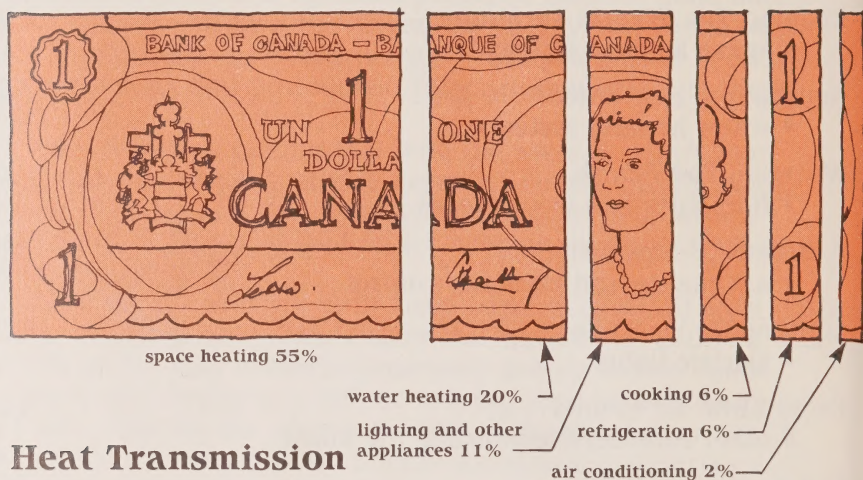
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Where The Energy Goes

The household 'energy-dollar' is sliced in a number of ways to meet various expenditures. Not surprisingly, in our climate, home heating makes the largest claim on the family energy budget.

Understandably, energy conservation measures are most likely to be applied where wastage is obvious and visible. However, heat can be lost in places that are not obvious, so let's start by considering a few basic principles.



Heat is transmitted in three different ways; namely by conduction, convection and radiation. Your house can gain or lose heat by all three methods.

Conduction: occurs when heat is transferred through one substance to another; for example from bare feet to a cold floor. Materials with poor rates of conductive heat transfer make good insulation.

Convection: occurs when heat is transmitted from one place to another by movement of air or water. A circulating air-heating system provides a good example.

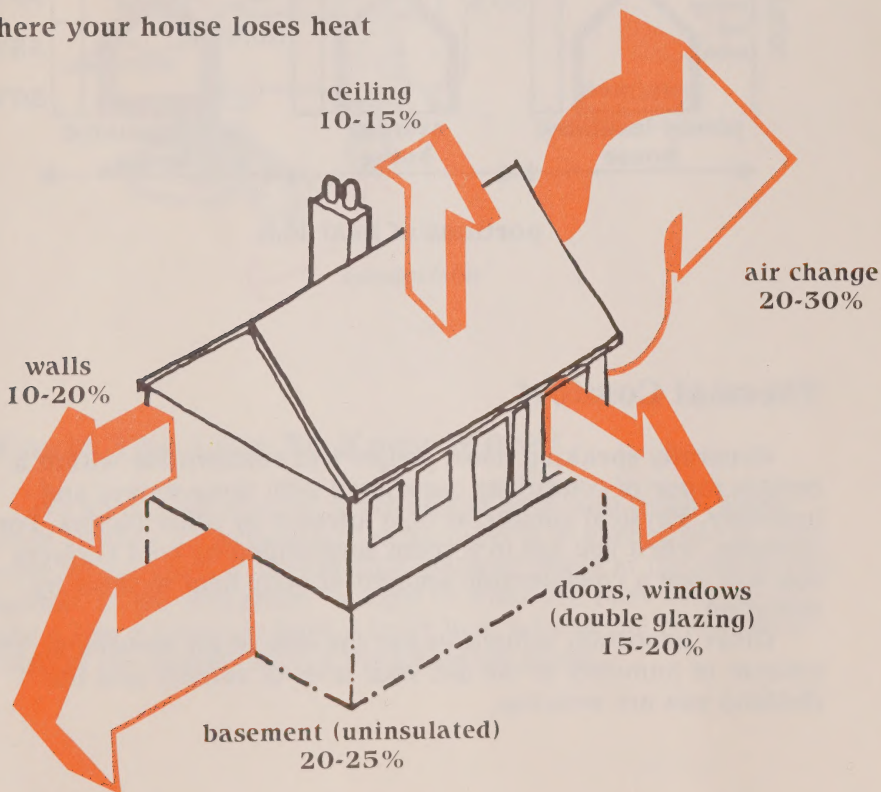
Radiation: occurs when heat is transferred through an intermediate space. Only the object receiving the radiation, not the space through which the radiant energy passes, is heated. That sunny room in your home is being heated in this way.

It is interesting to note that some heating systems employ more than one method of heat transfer. This includes electrical baseboard heaters and radiators in hot water space heating systems. As well as heating by radiation, they also transfer heat by conduction and convection.

Always remember, heat flows from a region of high temperature to a lower one. This means that in winter the flow of heat is from indoors to the outside; the reverse is true in summer. The more obstacles you place in the path of this flow, the slower will be the rate of heat transfer. Obviously, your best barriers are well-insulated walls, roofs and windows.

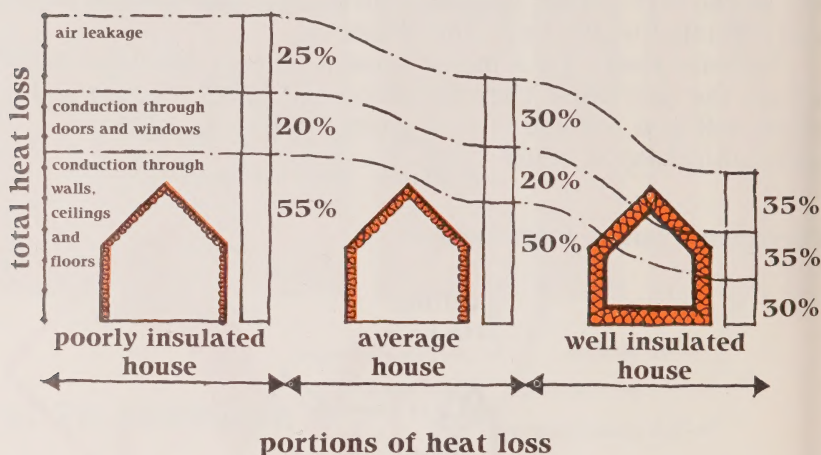
Transfer losses are a major cause of energy wastage. But they are not the only ones. They are aided and abetted by air leakage which will also rob you of your energy dollars at every opportunity, day or night.

where your house loses heat



Air Leakage

Cold draughts fit under this general heading. They are caused by air leaking in and out of hundreds of small holes and cracks around the house. Their effect is heightened by wind and by the difference between inside and outside temperatures. As the insulation in walls and roofs increases, overall heat loss decreases.



Thermal Comfort

Generally speaking, most people feel comfortable within a certain range of conditions associated with temperature and humidity. Physical comfort is also affected by other factors. For instance, when you are in a room surrounded by cold surfaces you will lose a considerable amount of body heat to them by radiation.

Other important influences are the rate of air movement, the amount of humidity in the air, your level of activity and the clothing you are wearing.



Would You Like To Know More?

We have tried to cover a very large area with quick, broad brush strokes. Keep tuned-in on all aspects of energy use in your home by referring to the reading material listed at the end of this manual. In the meantime, in light of what you have read so far, take a few minutes to have a fresh look around the house, then consider the suggestions in the following pages.

Bundling Up Your Home

Insulation is your double-duty overcoat. It will keep your home warm in winter and cool in summer. Don't judge its effectiveness just by thickness. Some materials have higher insulating (RSI) values than others.

Currently Recommended Minimum Levels of Insulation For New Homes, in RSI (R)¹

(NOTE: higher levels should certainly be considered and may be required for new construction in future)

Climate Zone	Walls	Basement Walls	Roof & Ceiling	Floors over	
				Unheated Spaces	Slab-on Grade
1. (e.g. Windsor, Toronto & Kingston)	3.0 (17)	1.5 (9)	5.6 (32)	4.7 (27)	1.7 (10)
2. (e.g. Sault Ste. Marie, Moosonee & Thunder Bay)	3.4 (19)	1.5 (9)	6.4 (36)	4.7 (27)	2.1 (12)

¹Imperial(R) values shown in brackets



ontario climate zones

There are four basic types of home insulation:

1. batt and blanket (most common type)

- sold in pre-packaged bundles

2. loose fill

- sold by the bag; best applied in horizontal spaces

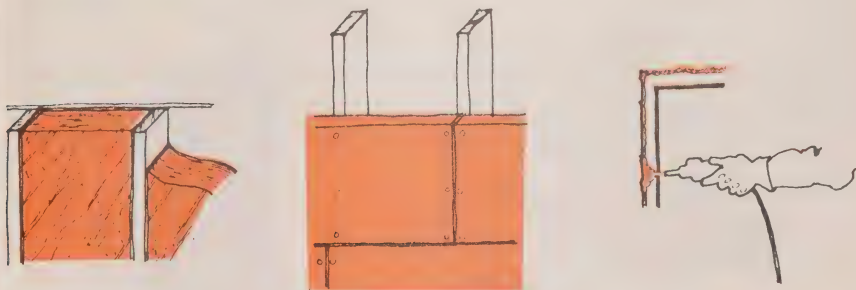
3. rigid foam plastic

- sold in panels and has high insulation value with minimum thickness and weight. This material is a fire hazard and must be separated from interior living spaces with a fire-resistant substance such as gypsum board.

4. foamed-in-place plastic

- requires professional installation with special equipment. Caution: use of urea-formaldehyde foam is banned by Health and Welfare Canada, due to the potential release of toxic fumes.

NOTE: It is important when you insulate to pay careful attention to the installation of an air/vapour barrier.



Options

◦ Wall and Attic Insulation

Compare your existing RSI value with the recommended levels. Add insulation as required in accessible areas, such as those illustrated overleaf. In the attic be sure that adequate ventilation is maintained. (For more details see the list of references on P.33).



- **Attic Hatch**

Insulate the top; weatherstrip the edge of the hatch frame for an air-tight fit.

- **Plumbing Stack**

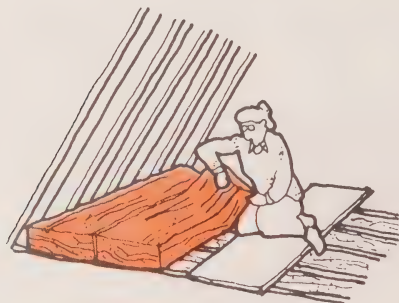
An air/vapour barrier should fit snugly against walls and pipes where they enter the attic from below.

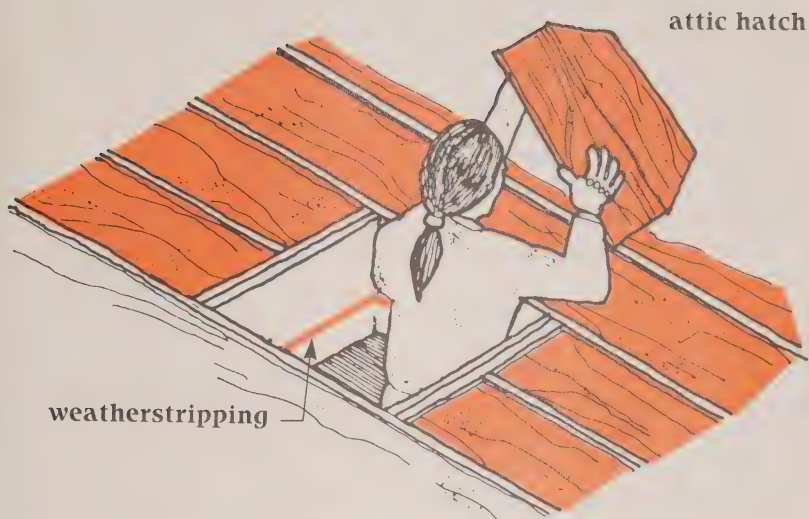
- **Recessed Light Fixtures**

Recessed lights pierce the attic air/vapour barrier. However they should not be insulated because this would prevent them from being adequately cooled thus creating a fire hazard. Recessed lights should be replaced with surface-mounted types.

- **Major Home Improvements**

If at any time home improvements result in exposing the interior of existing exterior walls, check the level and condition of existing insulation, as well as the condition of the air/vapour barrier. Your findings may suggest adding or replacing insulation. If you feel it necessary to improve the air/vapour barrier, apply a vapour-resistant paint or vinyl wallpaper.





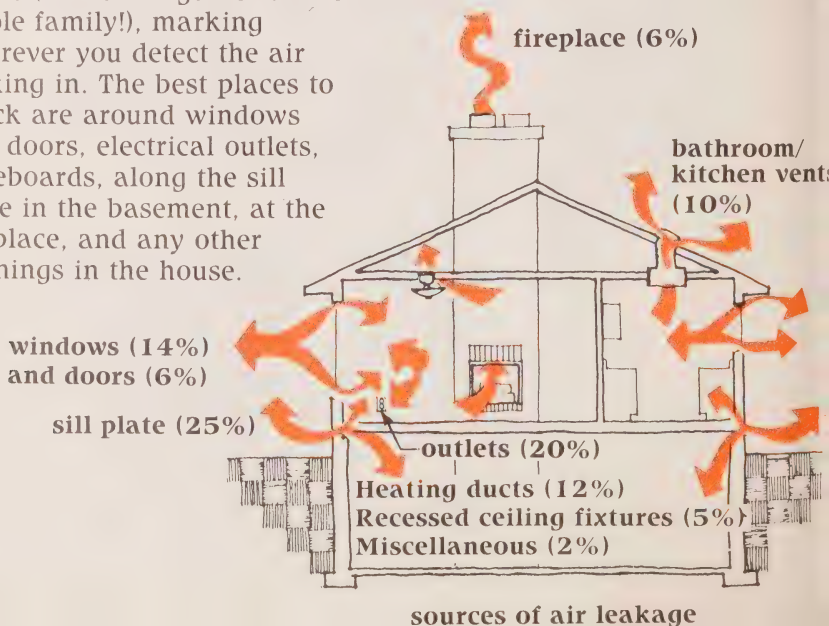
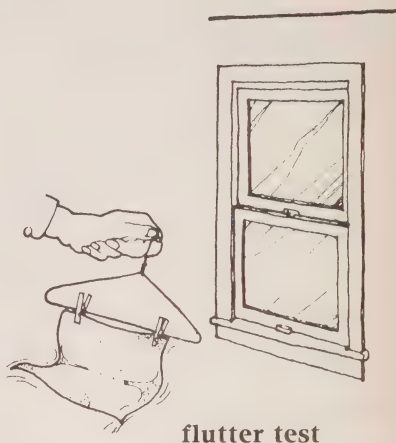
Maintenance

Spring: inspect insulation that is easily accessible, such as in the attic, for signs of moisture damage (eliminate source of moisture and replace damaged insulation) or settling (add insulation).

Maintaining a Tight Ship

Air is constantly leaking in and out of even the best of homes. Typically 25 to 30 per cent of your fuel bill is used up heating cold air that has leaked in and replacing hot air that has leaked out.

It is not unusual for houses to undergo minor shifts and moves as they adjust to climatic changes, and your new home will probably be no exception. Because of this, and because caulking tends to dry out, air leaks may increase as your house ages and weathers. Keep alert, identify and seal any that do occur. Identification is best accomplished by using the flutter test. A suspended piece of tissue, a candle flame, or smoke from a cigarette or incense stick, will all 'flutter' indicating air leakage. Test your entire house (make it a game for the whole family!), marking wherever you detect the air leaking in. The best places to check are around windows and doors, electrical outlets, baseboards, along the sill plate in the basement, at the fireplace, and any other openings in the house.



Options

Weatherstripping Any cracks around movable joints (windows, doors, hatches, etc.) should be weatherstripped.

Caulking All fixed joints that leak require caulking. A quality caulking compound that will remain flexible should be used. Caulking should be done on the **inside** of the house wherever possible to prevent moisture from accumulating in the walls.

Electrical Outlet Gaskets Electrical outlets on exterior walls can be sealed with a foam gasket cut to fit behind the front plate, and by the insertion of plastic safety caps.

Combustion Air

Remember, that gas or oil heating equipment including water heaters and also fireplaces and wood stoves etc., must have fresh air for combustion and to ensure the safe discharge of burnt gases via the chimney. You should, therefore, make sure that such heating equipment has an adequate, it not a separate, supply of outdoor air.

Operation

- during the heating season doors and windows should be kept closed as much as possible. If necessary, install good quality closers.
- vents in the bathroom and kitchen should be operated only as needed.
- during the summer, where possible, open low windows on the north side and high windows on the south side to induce cooling breezes and exhaust any heat buildup within the house.

Maintenance

Seasonal check:

- ☐ check weatherstripping for effectiveness by using the flutter test
- ☐ check that caulking is in place and has not cracked or dislodged
- ☐ check that all doors and windows close properly
- ☐ check that vents and dampers operate smoothly and close tightly

Keeping the Wheels Turning

Most new homes are heated either by forced-warm-air furnaces (gas, oil or electric) or by electric baseboard heaters.

Assisted by an electric fan or blower, your furnace circulates warm air through a series of ducts. Warm air registers distribute the air from the ducts into the room and have adjustable dampers so that you can control the amount of heat being delivered to the spaces they service.

Electrical baseboard heaters heat the air at their point of use by means of the electrical energy distributed along their elements.

In order to conserve energy, keep the temperature setting as low as possible in winter, consistent with your personal health and comfort requirements.

Options

Automatic Setback Thermostat This device lowers your thermostat setting at night and raises it before you get up. You can also use it in the daytime if your family is out all day.

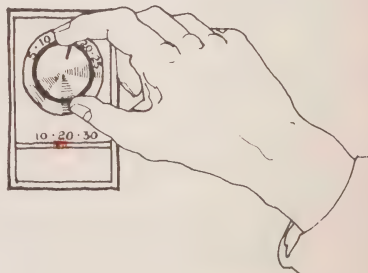
Humidity Gauge Also called a Hygrometer, it is similar to a thermometer but measures the relative humidity in your room, not the temperature.

Zone Controls These involve the installation of dampers in primary heating ducts which will permit adjustment of heat supply to suit demand in different parts of the house.

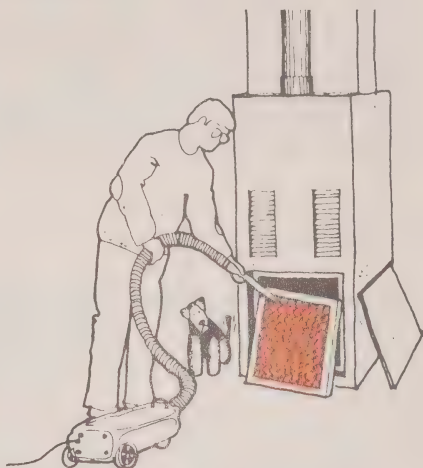
Electric Blanket Use with lower night-time room temperature.

Operation

- maintain a minimum desirable temperature. If you do not have an automatic setback, turn down your thermostat at night, during the day when the house is empty, or while you are on holiday. It can save as much as 20 per cent of your fuel heating bill.



- do not obstruct heating system air outlets or cold air returns with furniture, carpets or drapes, and adjust heat outlets to achieve comfortable air distribution.
- if your gas furnace has a pilot light, turn it off in summer, re-light in fall; in order to avoid risk of corrosion in the unit, check with your gas company first if there is any sign of dampness in the basement.
- adjust dampers in ducts to balance air supply; minimize heat delivery to unused rooms.
- check furnace air filters regularly. Poor maintenance can shorten equipment life.



cleaning furnace filter

Maintenance:

Read and follow the operating and maintenance instructions of your furnace. Establish servicing schedule — full service every 2 or 3 years for a gas furnace and every year for oil.

Periodic:

- ☐ keep furnace filters clean and replace as necessary; clogged filters can reduce heating efficiency by up to 25 per cent.
- ☐ keep baseboard heater fins clean with vacuum.
- ☐ keep fan clean.
- ☐ oil fan motors.

Fall:

- ☐ check ducts for debris — especially before first start-up after purchase.
- ☐ keep ducts clean.
- ☐ check heating ducts for leaks.
- ☐ check duct insulation in unheated areas, seal and tape defective joints in the insulation.

Getting Into Hot Water

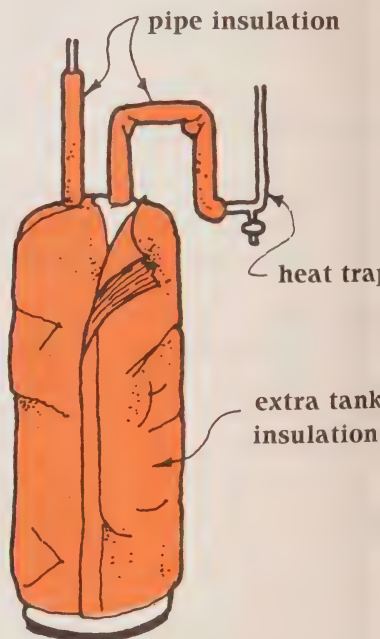
The typical water heater consumes 6000 kilowatt hours (Kw.h) of electricity (or its equivalent in gas) per year. That is equivalent to roughly twenty per cent of your home's total energy budget. In dollar cost, at 3.6¢ per Kw.h it represents over \$200.00 for the year. New water heaters on the market include energy conserving features such as increased levels of insulation and electronic ignition for gas heaters. Even if your unit does not have these features, there are many simple low cost or zero-cost changes you can make to reduce your hot water heating bill.

Options

Pipe Insulation Insulate pipes to save energy and reduce sweating problems in the summer months. At least the first metre of both the hot and cold pipes from your tank should be insulated.

Extra Tank Insulation Most hot water tanks have only 25 mm or 50 mm (1 or 2 inches) of insulation. Heat loss through the tank walls can cost over \$30 each year. Adding a 90 mm (3-1/2 inch) batt around the tank can reduce heat loss from the tank by up to 70 per cent. When adding insulation to gas heaters it is essential to keep controls, junction boxes, air inlets and the top of the tank clear. For electric water heaters you must check with your local utility.

Heat Trap Added to your hot water pipe, the "U"-shaped pipe traps hot water and prevents it from convecting away.



Lowering the Thermostat: The typical hot water tank is set at a high temperature, usually 66°C (150°F). Water at that temperature takes only a few seconds to scald and must be mixed with cold water. Lowering the temperature setting of your hot water tank will result in significant energy savings and a longer tank life (electric units, consult electrician or hydro). We suggest 49°C (120°F), but you may find a lower limit still acceptable. Dishwashers require a temperature of 60°C (140°F).

Water-Saving Shower Head; This can cut your over-all hot water bill by 15 to 20 per cent. It reduces the water flow but still gives you a skin-tingling shower.



bath



regular shower head



**water saving
shower head**

Operation

- reduce hot water consumption.
- take showers rather than baths.
- use full loads for dishes and laundry, use the light cycle and cooler water whenever possible.
- avoid running the hot water tap unnecessarily.

Maintenance

every two years:

- ☐ have gas-fired water heaters serviced

every three months:

- ☐ drain your tank from the bottom valve until the water runs clear

when required:

- ☐ fix dripping taps. Replacing a 7¢ washer can save 9100 litres (2000 gallons) of hot water a year.

Warming The Hearth

Fireplaces and wood stoves have always been popular. With rising energy costs they are also becoming an increasingly economic method of supplementing heating in regions where inexpensive and plentiful supplies of wood are available.



**tempered glass doors and
outside combustion air inlet**

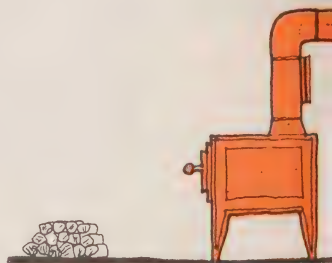
Though people enjoy its romantic appeal, regrettably the traditional fireplace gets poor marks as a heater. This is because it draws out so much of the heated room air through its chimney. Some units have features that improve their energy-efficiency. However, even the best fireplaces are just too inefficient to be considered as your major heat source.

Options

Doors of Tempered Glass Kept closed when the fireplace is in use, they reduce the volume of room air escaping up the chimney. The amount of heat saved in this way is much greater than the amount you would have received from the open fire. You will find that the glass doors still radiate heat into the room.

Outside Air Duct (preferred method) means the fireplace uses outside air rather than warm room air for combustion.

Wood Stoves Some homeowners are adding air-tight wood stoves. Much more efficient than even the best fireplaces, they come in a variety of styles and sizes. An air-tight wood stove can be added to an existing conventional fireplace. Units are now on the market which operate as efficient air-tight stoves, but also allow the unit to be enjoyed as an open fireplace. These units work best when they are free-standing within the room. The flue is vented to the fireplace cavity or chimney according to the manufacturer's instructions.



wood stove



Operation

- close glass doors or screen when fireplace is in use.
- close doors and damper when fireplace is not in use.
- give air-tight wood stoves adequate combustion air to avoid creosote build-up. A stove used regularly should have a hot fire maintained at least once a day.
- clean out ashes regularly, place in an air-tight metal container and remove from the house.
- burn only well-seasoned wood for efficient combustion.
- inspect flues every few months, more frequently at the beginning of the heating season.

Maintenance

Periodically:

- ☐ check the seal on dampers and vents.
- ☐ check for creosote build-up. Creosote is a fire hazard. Clean flue as necessary.

NOTE:

An outdoor air duct is listed under "Options" on page 16. However, if you tightly seal your home, then an outside air duct becomes a necessity.

A Breath of Fresh Air

It is important to maintain proper air quality in your home, for the sake of your health and comfort and to prevent condensation problems.

Air exchange (the removal of inside air and its replacement with a fresh supply) is needed to provide essential oxygen and to remove any odours or pollutants that accumulate. In the past, our houses provided all the fresh air we needed — and more — through accidental and uncontrolled air exchanges. Now, the high cost of energy dictates that you tighten up your house as much as possible by caulking, weatherstripping and sealing all the air leaks you can find. As a result, if you do a first class job, you may get to the point where you must provide ventilation, as well as combustion air. One of the most common signs of a lack of ventilation is the formation of condensation, especially on windows, due to excessive humidity. Taking precautions to control the excessive humidity and providing combustion air, will, under normal conditions resolve any problems.

Operation and options

Watch for excessive condensation on the inside surface of your double-pane windows. If it occurs between independent window panes, your unit needs sealing with a caulking compound, or, if a sealed type, your unit needs to be repaired or replaced.

The first item to check for is excess humidity. It is generated by people, (something you have little control over!), plants, cooking, washing, and drying clothes in the home. Damp basements or over-zealous washing habits can also add excessive moisture to the air. Check the setting on your humidifier if you have one built into the furnace.

The following chart indicates the maximum allowable humidity levels at various outdoor temperatures if you wish to avoid condensation on double-paned windows. Bear in mind that you may get some condensation forming when you lower your thermostat overnight or when the house is unoccupied.

Outdoor temperature

°C

°F

**Maximum
Humidity Level****Desirable
Humidity Level**

-35

-31

15%

15%

-29

-20.2

20%

20%

-23

-9.4

25%

25%

-18

0

30%

30%

-12

10.4

35%

40%

-7

19.4

40%

40%

-1

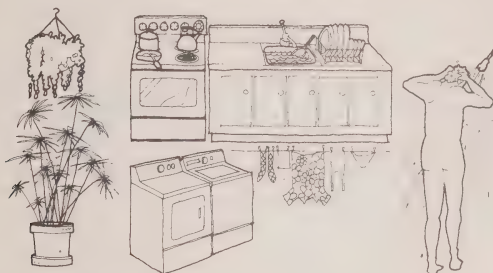
30.2

45%

40%

(Humidity levels 10-15 per cent higher can be accommodated with triple glazing)

If you have reduced the moisture you are putting into the air and still have a humidity problem you must then induce ventilation. This can be considered a good sign. It means your air exchange rate, and therefore heat loss, is very low.



**sources of
humidity**

Inducing ventilation

Individual window or fan: For spot ventilation open kitchen or bathroom windows a crack or operate the vent fan for a brief time with a window open.

Windows: If humidity problems persist, open a window (one on each floor of a two storey house) to increase ventilation rates. This method does not allow for much control.

Power Ventilator: Operated from a humidistat. This will ventilate according to a predetermined setting.

Air-to-Air Heat Exchanger: required in houses with an extra tight seal to supply fresh air and expel excess humidity with minimum loss of heat.

Lighting Up Your Life

Wherever possible, take full advantage of natural daylight. Resort to other means only when this proves inadequate. Incandescent and fluorescent are the two principal artificial light sources. Incandescent is the more popular because it generally gives a warmer, softer illumination than fluorescent and more closely resembles daylight. However, keep in mind it is much more wasteful in energy consumption. Fluorescent lights are about 4 times more energy-efficient than incandescent lights.

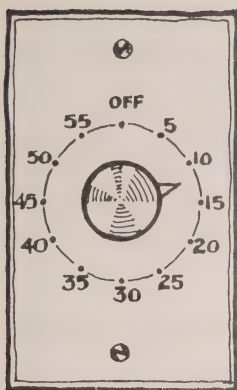
In lighting your house first consider the activities for which the space is to be used. Direct lighting is much more efficient than indirect.

Options

Time Switches Switches that operate automatically are useful for basements, attics or other places where lights could be left on accidentally for many days or longer. Time switches can be used for outside lighting. They will turn on just before you arrive home rather than burn all the time you are away.

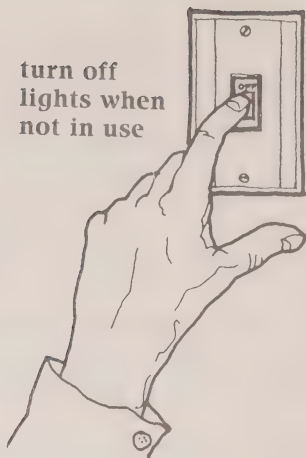
Dimmer Switches Dimming your lights can save money. Solid state dimmer switches save more energy than rheostats. It is not recommended to use normal dimmer switches with fluorescent lights as they can reduce the life of this type of fixture. However, appropriately designed dimmer switches are available for use with fluorescents.

Warm Light Fluorescent Lamps They provide light closer in quality to incandescent than conventional fluorescent types and still use less energy.



time switch

turn off
lights when
not in use



Operation

- illuminate only when and where lighting is required. This is commonly referred to as 'task lighting'. The 'off' switch is a great energy conserver.
- use fluorescent lighting where compatible with the task to be illuminated or atmosphere desired.
- use a lower watt bulb in place of a higher watt bulb where resultant lighting is adequate for need.
- use a single higher watt bulb rather than several lower-watt types — you will save electricity.



fluorescent light



incandescent
light

Maintenance

Throughout the year:

- ☐ keep windows clean
- ☐ keep bulbs, shades and reflectors clean
- ☐ paint interiors and window frames in light colours to enhance level of illumination and increase natural light penetration.

Every Little Bit Counts

Our aim in this manual is to help you to fully enjoy the benefits of a home built in Canada. We enjoy living standards which are among the highest in the world, yet we must not take this lifestyle for granted. Continued enjoyment of these benefits depends upon the sensible use of our resources by each of us. There are numerous small ways, as well as large, in which you can reduce energy consumption in your home. They all add up. How many more can you think of?

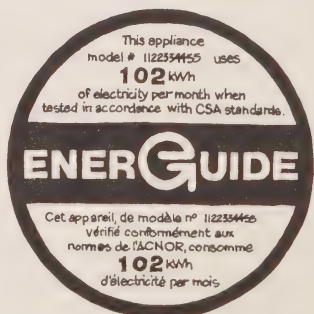
Air-lock entrances: If your house has a vestibule, enclosed porch, or 'mud room' you can go in and out without letting in gusts of cold air as long as one door remains closed.

Drapes: Open them during winter days and let the sunshine in; 'passive' solar heating will help reduce your fuel bills. Close drapes at night for increased comfort and decreased heat loss. Reverse this during the summer; keep the sun out for a cooler house.

Awnings: Properly designed awnings will keep out hot summer sun but still permit entry of welcome winter sunshine.

Energy-Efficient Appliances: Many appliances now come with the EnerGuide energy rating. Look for the label; choose one with a low rating for increased savings. Always operate appliances with an eye to energy-efficiency — use full loads, lower temperatures, and keep appliances clean.

Consumer and Corporate Affairs Canada, through the Canadian Standards Association, is testing appliances for their energy consumption and affixing labels (ENERGUIDE) that allow the purchaser to compare the efficiency of different appliances. Use the smallest appliance capable of meeting your requirements.



Holiday-eve checklist: When going on a holiday you can 'turn-down' the house. It will take only a short time for it to come back to normal once you return.

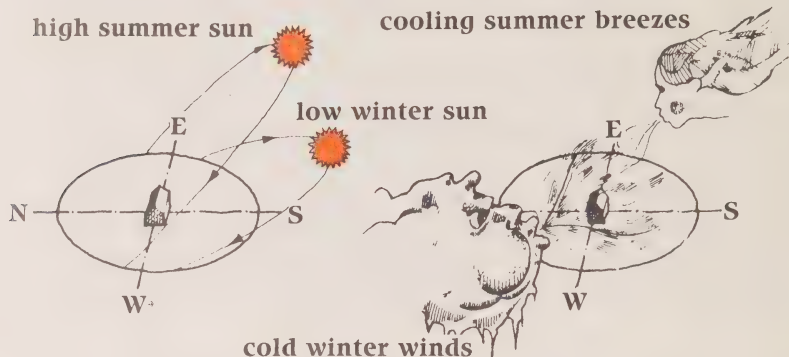
- set the thermostat back, but not so far that there might be danger of freezing (recommend you do not set below 10°C or 50°F).
- set the refrigerator at a 'warmer' level.
- unplug any appliances such as an instant-on T.V. that draws power.
- turn off the hot water tank.

Lifestyle Habits: Two identical houses can have widely different fuel bills due to the occupants' habits. Do you leave windows open in the winter? Keep the thermostat set high all day and night? Do you leave appliances, lights, stoves, etc. running longer than necessary? Do you spend winter indoors in your summer short-sleeved shirts? Is your fuel bill twice that of your neighbour's?

Nature Knows Best

Cultivate your garden. It can be a valuable ally where energy savings are concerned. Thoughtfully arranged trees, shrubs and other landscaping devices will shelter your home from cold winter winds and shade it from hot summer sun.

The seasonal paths of the sun and wind directions are the main factors for you to consider.



First of all, prepare a landscaping plan. Note your orientation and the direction of prevailing winds and driving rain and snow. Also plot all the important existing features which are on your lot as well as any adjacent trees or buildings which affect it. Now you are ready to combine beauty with practicality. Keep in mind the following;



summer shade



winter sun — northern shelter

Options

Paving Materials Hard and non-reflective exterior surface areas will absorb and radiate heat during the summer. On a sunny summer day, the air temperature over a grassy surface, or other low-growing foliage, can be 6°-9°C cooler than over soil or hard pavement. However, when hard surface material is desirable, use light coloured materials which will reflect solar heat.

Solar Greenhouse or Sun Space If you are planning an addition with a southern exposure, why not incorporate a 'solar greenhouse'? It will enable you to enjoy fresh flowers and vegetables year round and also capture heat for circulation into the house. Talk it over with a friendly expert first.

Wooden Deck A raised wooden deck with spaces between the boarding permits the passage of cooling breezes through and under.

Trees and Shrubs Select trees and shrubs appropriate for your climate and soil. Consider growth rate, ultimate size, foliage density, bare branch density and shade patterns.

Solar Pool Blanket and Water Heater If you have a swimming pool, a solar blanket rolled out over the surface of the water at night makes an excellent heat trap. Many types of solar pool water heaters are now available which make good use of that hot summer sun.

Maintenance

Spring:

- ☐ dig compost into gardens
- ☐ prepare lawns

Fall:

- ☐ drain water from solar pool water heater

Periodically:

- ☐ install landscape elements in accordance with long-term plan
- ☐ nurture new plants
- ☐ prune and trim

Same Time Next Year

This checklist and servicing guide will help you keep your home permanently 'tuned-up' and functioning in an energy-efficient manner. It's not a comprehensive list but we have covered a number of basic items which will amply repay all the attention you can give them. They are all of a 'do-it-yourself' nature, except where noted.



Item		Time of Year		Checked				
		Periodically	Spring/ Summer	Fall/ Winter	198	198	198	198
Exterior: Walls	- Repair cracks and loose joints in brickwork and foundations walls.							
	- Check for air leakage around all penetrations through walls e.g. drier vents.							
Windows & Doors	- Check caulking, weatherstripping & door thresholds.							
	- Install storm windows and storm doors.							
	- Clean glass.							
	- Install window awnings							
	- Remove window awnings							
Roof	- Check all flashings around chimney & vents passing through roof — avoid wet insulation.							
Garden	- Plant shade trees or windbreak							
	- Prune trees and shrubs to desired shape.							
	- Put insulation blanket over outdoor pool.							
	- Dig in compost.							

Item		Time of Year			Checked			
		Periodically	Spring/ Summer	Fall/ Winter	198__	198__	198__	198__
Interior: Walls	- Check for air leaks around electrical boxes, baseboards and vents.							
	- Seal at penetrations through floor above							
Floors	- Check for air leaks at junctions of walls & floors.							
	- Check for air leakage around sash, frames and trim.							
Windows & Doors	- Install seasonal shutters.							
	- Check for roof leaks.							
Ceilings & Attics	- Check condition of exposed insulation and make sure it fits snugly.							
	- Close vents to crawl-space.							
Crawl Space or Unheated Basement	- Open vents to crawl-space.							
	- Check for dampness caused by water penetration or condensation.							

Getting the Message

The object of this manual is to help you keep energy consumption to a minimum. The most important measure of your success is the quantity of energy used, not its dollar cost. Energy prices are rising constantly. If your bills remain high or unchanged despite all the steps you have taken, don't be misled, or discouraged — they would be higher still without your efforts. Remember: as prices rise the energy you save will pay you ever-larger dividends.

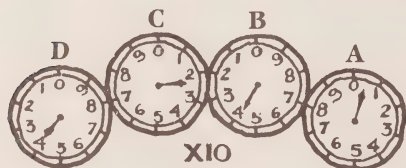
It's quite easy to measure your consumption of the commonly used types of fuel. This is demonstrated below. Incidentally, there are no mysteries attached to meter reading.

Electricity The typical electric meter has a row of four clock-like dials. It records the quantity consumed in kilowatt hours (Kw.h). The pointer in each dial turns in the opposite direction from the one next to it. It must complete an entire revolution before the number on the dial to the left will advance by one digit.

In our illustration, each digit in dial A registers 10 Kw.h, on dial B 100 Kw.h, on dial C 1000 Kw.h and on dial D 10000 Kw.h.

Note that the lowest number is read when the pointer is between two digits. Note that most electric meters record only 1/10th of the energy; if "x10" is imprinted on the face of your dial, multiply your readings by 10.

'Getting the message' from your electricity consumption rates (i.e. quantity and cost) should be done on a monthly basis. The table opposite is one suggested recording format.



electric meter reading:

$$4,240 \times 10 = 42,400 \text{ Kw.h}$$



gas meter reading:

$$14,300 \text{ cu. ft.}$$



ELECTRICITY CONSUMPTION TABLE

198__

	Month	kWhs	\$	Conservation Measures Taken	Capital Cost (if any)	Observations
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
Totals						

Gas A gas meter usually has three dials and records the quantity consumed in cubic feet (cf). It can be read in a similar manner to the electric meter except that dials A, B and C register hundreds, thousands and tens of thousands of cubic feet respectively. Eventually, as the Province converts to metric, measurements will be in cubic metres (m^3).

Oil Oil consumption can only be measured accurately by recording the total amount of home heating oil delivered to you. Your oil company invoices will give you both the exact quantity (either in litres or gallons) and the cost per unit.

Wood The cord is the unit of measure. Keep a record of quantity consumed and cost. Note, a 'full' cord measures 4' x 8' x 4'; 'face' cords have the same (4'x8') face dimension, but a lesser depth, and are 1/3 to 1/4 the size of a 'full' cord.

Comparisons Can Be Delightful

By filling out the following table each year you will obtain a quick comparison of energy consumption and costs. If you follow all the suggestions in this booklet, it will also help you when you wish to sell your home.

YEAR

	198__		198__		198__		198__	
	Energy consumed	* Energy consumed	Energy consumed	Energy consumed	Energy consumed	Energy consumed	Energy consumed	Energy consumed
	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost
Oil								
Gas								
Electricity								
Other sources								
Total cost								
Type of winter	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	<input type="checkbox"/> mild <input type="checkbox"/> average <input type="checkbox"/> severe	
Retrofit capital costs — if any								
Observations								

Read On ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦

The Bill Payer's Guide to Furnace Servicing. Conservation and Renewable Energy Branch, EMR, 580 Booth St., Ottawa. 1975, 99 pp., free. This publication examines in detail the operation and maintenance procedures required to ensure that your oil or gas furnace is running efficiently.

Builders' Guide To Energy Efficiency in New Housing. Ontario Ministry of Energy and HUDAC, 1980, 138 pp., \$6.00. This well-illustrated guide emphasizes day-to-day knowledge to help the home builder achieve practical results in the field of energy conservation.

Ecology House Fact Sheets. Ecology House, 12 Madison Ave., Toronto, 1981, Ecology House issues a series of fact sheets on re-insulation, energy-efficient appliances, waste management and greenhouses.

The Fuel Savers. Prowle and Anderson; TEA Inc., Harrisville, New Hampshire, 1978, 60 pp., \$3.75. This handy little book covers many solar-related projects that can be added to existing houses.

The Home Energy Guide — How To Cut Your Utility Bills. Rothchild & Tenney, Vallantine Books, 1978, 247 pp., \$1.95. The energy-wise home owner will appreciate the depth of information contained in this readable pocket book; it is a detailed guide toward the establishment of a "home energy plan or strategy" and a "home energy budget".

Keeping The Heat In. Conservation and Renewable Energy Branch, EMR, 580 Booth St., Ottawa, 1981, 108 pp., free. This new edition of the classic publication covers re-insulating and making existing buildings air-tight.

What you don't know can turn people off. Ontario Hydro, 19 pp., free. This booklet deals with all aspects of energy conservation around the home. It includes two pin-up reference lists for laundry room and kitchen.

Worth Watching - Keeping a watchful eye on your meter saves electricity and money. Ontario Hydro, 9 pp., free. This pamphlet deals with conservation of electricity around the home. It includes a "Meter Watcher's Log" for keeping track of your savings.

NOTE: **Enersave Hotline: 1-800-267-9563 (toll free)
995-1801 (in Ottawa)**

A House For All Seasons

**Prepared on behalf of the Ontario Ministry of Energy and
the Housing and Urban Development Association of Canada
by:**

**ENERPLAN CONSULTANTS LTD.
RENEWABLE ENERGY IN CANADA
ENERMEDIA INTERNATIONAL**

Remember

Fixing up your home to save energy can make your home more comfortable to live in, by eliminating drafts and cold walls. It can also save you money. But don't forget that you also change the way your house and heating system "breathe" by doing so. To make sure your furnace — and your family — breathe properly, make sure you balance the conservation changes with combustion air changes.



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